

1                   **THE EMBODIMENTS OF THE INVENTION IN WHICH AN**  
2 **EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS**  
3 **FOLLOWS:**  
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5                   1.     An improved diagnostic apparatus for diagnosing and servicing  
6 pneumatic braking systems of trailers comprising:

7                   a pneumatic circuit, adapted for connection to pneumatic braking  
8 systems on the trailer;

9                   means, responsive to an electrical signal, for cycling the pneumatic  
10 circuit between an applied state wherein air is supplied to the trailer's pneumatic  
11 braking systems and a released state wherein air is released from the trailer's  
12 pneumatic braking systems;

13                  a timer circuit, electrically connected to the means for cycling the  
14 pneumatic circuit for controlling a timed interval between the applied state and the  
15 released state, the timed interval being adjustable;

16                  a diagnostic brake light circuit adapted for connection to a brake light  
17 circuit on the trailer, the diagnostic brake light circuit having a circuit switch operable  
18 to transmit an electrical signal in on-state and having an indicator means for  
19 connection thereto; and

20                  a pressure actuated switch, connected between the means for cycling  
21 the pneumatic circuit and the diagnostic brake light circuit, and operable between an  
22 electrically conductive state when pressure is applied to the pressure actuated  
23 switch and an electrically non-conductive state when pressure is released from the  
24 pressure actuated switch, wherein

1           when the pneumatic circuit is in the applied state causing pressure to  
2 be applied to the pressure actuated switch and when the diagnostic brake light  
3 circuit is in the on-state, the electrical signal from the brake light switch is conducted  
4 through the pressure actuated switch to the means for cycling the pneumatic circuit,  
5 maintaining the pneumatic circuit in the applied state, regardless of the state of the  
6 timer circuit.

7  
8           2.     The improved diagnostic apparatus as described in claim 1,  
9 wherein the means for cycling the pneumatic circuit is a solenoid.

10  
11           3.     The improved diagnostic apparatus as described in claim 1,  
12 wherein the diagnostic brake light circuit further comprises a circuit breaker,  
13 operable between the circuit switch and the electrical brake light circuit on the trailer.

14  
15           4.     The improved diagnostic apparatus as described in claim 1,  
16 wherein the timer circuit further comprises:

17                 a circuit switch,  
18                 a circuit breaker, operable between the circuit switch and the electrical  
19 brake light circuit on the trailer; and  
20                 an indicator light for indicating the operation of the timer circuit.

1           5.     The improved diagnostic apparatus as described in claim 1  
2 further comprising a plurality of diagnostic signaling circuits adapted for connection  
3 to a plurality of signaling circuits on the trailer.

4  
5           6.     The improved diagnostic apparatus as described in claim 5  
6 wherein each of the plurality of diagnostic signaling circuits further comprises:

7                 a circuit switch; and  
8                 an indicator light for indicating the operation of each of the signaling  
9 circuits on the trailer.

10  
11           7.     The improved diagnostic apparatus as described in claim 6  
12 wherein the plurality of diagnostic signaling circuits further comprise:

13                 a left turn signal diagnostic circuit;  
14                 a right turn signal diagnostic circuit;  
15                 a tail light diagnostic circuit;  
16                 a marker light diagnostic circuit; and  
17                 an ABS brake light diagnostic circuit.

18  
19           8.     The improved diagnostic apparatus as described in claim 7  
20 wherein each of the left and right turn signal diagnostic circuits further comprise a  
21 flasher for transmitting an intermittent power signal from corresponding left and right  
22 turn signal circuits on the trailer to the diagnostic apparatus.

1                   9.     The improved diagnostic apparatus as described in claim 1  
2 wherein the indicator means is an indicator light.

3

4                   10.    The improved diagnostic apparatus as described in claim 9  
5 wherein the indicator light is an LED.

6

7                   11.    An improved diagnostic apparatus for testing electrical and  
8 pneumatic systems on a trailer comprising:

9                   a pneumatic circuit, adapted for connection to pneumatic braking  
10 systems on the trailer;

11                  means, responsive to an electrical signal, for cycling the pneumatic  
12 circuit between an applied state wherein air is supplied to the trailer's pneumatic  
13 braking systems and a released state wherein air is released from the trailer's  
14 pneumatic braking systems;

15                  a timer circuit, electrically connected to the means for cycling the  
16 pneumatic circuit for controlling a timed interval between the applied state and the  
17 released state, the timed interval being adjustable;

18                  a diagnostic brake light circuit adapted for connection to a brake light  
19 circuit on the trailer, the diagnostic brake light circuit having a circuit switch operable  
20 to transmit an electrical signal in on-state and having an indicator means for  
21 connection thereto;

22                  a plurality of diagnostic signaling circuits each circuit adapted for  
23 connection to signaling circuits on the trailer, each diagnostic signaling circuit having

1 a circuit switch means, operable between an off-state and an on-state and having an  
2 indicator means for connection thereto; and

3 a pressure actuated switch, connected between the means for cycling  
4 the pneumatic circuit and the diagnostic brake light circuit, and operable between an  
5 electrically conductive state when pressure is applied to the pressure actuated  
6 switch and an electrically non-conductive state when pressure is released from the  
7 pressure actuated switch,

8 wherein when the pneumatic circuit is in the applied state causing  
9 pressure to be applied to the pressure actuated switch and when the diagnostic  
10 brake light circuit is in the on-state, the electrical signal from the brake light switch is  
11 conducted through the pressure actuated switch to the means for cycling the  
12 pneumatic circuit, maintaining the pneumatic circuit in the applied state, regardless  
13 of the state of the timer circuit.

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15 12. The improved diagnostic apparatus as described in claim 11,  
16 wherein the means for cycling the pneumatic circuit is a solenoid

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1           13.    The improved diagnostic apparatus as described in claim 11  
2 wherein the plurality of diagnostic signaling circuits further comprise:

- 3           a left turn signal diagnostic circuit;
- 4           a right turn signal diagnostic circuit;
- 5           a tail light diagnostic circuit;
- 6           a marker light diagnostic circuit; and
- 7           an ABS brake light diagnostic circuit.

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9           14.    The improved diagnostic apparatus as described in claim 13  
10 wherein the left and right turn signal diagnostic circuits further comprise a flasher  
11 capable of transmitting an intermittent power signal from corresponding left and right  
12 turn signal circuits on the trailer to the diagnostic apparatus.

13  
14           15.    The improved diagnostic apparatus as described in claim 11,  
15 wherein the timer circuit and each diagnostic signaling circuit further comprises a  
16 circuit breaker, operable between the circuit switch and the corresponding signaling  
17 light circuit on the trailer.

18  
19           16.    The improved diagnostic apparatus as described in claim 11  
20 wherein the indicator means are indicator lights.

21  
22           17.    The improved diagnostic apparatus as described in claim 16  
23 wherein the indicator lights are LED's.

1                    18.    The improved diagnostic apparatus as described in claim 16  
2    wherein the indicator lights are incandescent lights.  
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